

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Appeals and Interferences

In re the Application of

Inventors: Kazuyuki MIYA et al.

Appln No.: 10/069,480

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For: FAST PACKET TRANSMISSION SYSTEM

REPLY BRIEF

On Appeal From Group Art Unit 2455
Examiner Shawki Saif Ismail
Confirmation No. 3434

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I. Introduction

This Reply Brief is a supplement to Appellants' Appeal Brief in that it addresses remarks presented in the Examiner's Answer, dated September 15, 2009, that substantively differ from those presented in the Final Rejection dated December 9, 2008, and the Advisory Action dated March 11, 2009. The remarks presented herein supplement those presented in the Appeal Brief, but do not replace them. Appellants respectfully request the Board to consider Appellants' Appeal Brief as the primary response to the pending rejections and this Reply Brief as a response to the substantively different remarks newly presented in the Examiner's Answer.

Claims 1-50 have been presented for examination. Claims 1-37 have been canceled. Claims 38-50 stand finally rejected and form the subject matter of the present appeal.

Claims 38, 39, 42-47 and 50 stand rejected, under 35 USC §103(a), as being unpatentable over Mohebbi (US 6,889,046) in view of Nakajima et al. (US 5,940,769). Claims 40, 41, 48, and 49 stand rejected, under 35 USC §103(a), as being unpatentable over Mohebbi in view of Nakajima and Parkvall et al. (US 6,542,736).

II. Reply to Examiner's Answer

The remarks presented in section 9 of the Examiner's Answer are nearly identical to those presented in the Final Rejection. Appellants submit that the Examiner's Answer substantively differs from the Final Rejection only with respect to the remarks presented in section 10 of the Examiner's Answer.

Section 10 of the Examiner's Answer contains five subsections, subsections A-E. Each of subsections A-D argues that Nakajima inherently discloses the claimed subject matter Appellants' have identified as missing from the combined teachings of the references applied in the pending

rejections. Specifically, each of subsections A-D proposes that Nakajima's disclosure of communicating an acknowledgment/negative acknowledgment (ACK/NACK) signal from a mobile station to a base station "inherently" provides a disclosure of the Appellants' claimed subject matter of communicating information indicating the packet number of a packet that is requested to be communicated in a next transmission unit (see Examiner's Answer page 9, second paragraph (especially line 5), page 10 first paragraph (especially line 8), page 11, first paragraph (especially line 9), and page 12, first paragraph (especially line 4)).

However, as acknowledged in the Examiner's Answer (see page 8, last paragraph), Nakajima discloses, in Figs. 1 and 2, that a base station 101 transmits a single packet to a mobile station 102 (see Nakajima col. 1, lines 51-53, and Examiner's Answer page 8, last paragraph). If mobile station 102 does not detect an error in this single packet, then mobile station 102 communicates an ACK signal to base station 101 and base station 101 then transmits the next packet of a sequence to mobile station 102 (see Nakajima col. 1, lines 53-59). On the other hand, if mobile station 102 detects an error in the single received packet, then mobile station 102 communicates a NACK signal to base station 101 and base station 101 retransmits the last packet it transmitted to mobile station 102 (see col. 1, lines 59-65, {note that Nakajima occasionally misidentifies mobile station 102 as a second base station 102 in this passage}). Nakajima does not disclose that base station 101 transmit packets out of sequence or that a subsequent packet may be transmitted before receiving an ACK signal or a NACK signal for a previously transmitted packet, and the Examiner's Answer does not propose otherwise.

Thus, as acknowledged in the Examiner's Answer (see Examiner's Answer page 8, last paragraph), Nakajima discloses that a single base station 101 transmits a single packet to a single

mobile station 102 until receiving an ACK or a NACK signal in response. The ACK/NACK signal informs base station 101 whether mobile station 102 received this single packet correctly.

The Examiner's Answer proposes that Nakajima's ACK/NACK signal must inherently identify a packet number of a next packet to be transmitted because each packet has an associated packet number and base station 101 transmits a next packet in a sequence if an ACK signal is received from mobile station 102 and retransmits a last-transmitted packet if a NACK signal is received from mobile station 102, in response to base station 101's transmission of a single packet (see Examiner's Answer page 8, last two paragraphs, and page 9, second paragraph).

Although Nakajima's base station 101 recognizes: (1) an association between receiving an ACK signal and transmitting a next packet in a sequence and (2) another association between receiving a NACK signal and transmitting a last-transmitted packet, neither of these two associations provides information indicating the packet number of a packet that is to be transmitted in a next transmission unit. As acknowledged in the Examiner's Answer, Nakajima discloses that the same base station 101 either transmits a next packet within a sequence or retransmits the last-transmitted packet. Such does not necessarily occur with the Appellants' claimed subject matter.

The Appellants' claimed subject matter recites that each of a plurality of base stations receives acknowledgment/negative acknowledgment information from a mobile station that receives a packet transmitted by one of the base stations. Additionally, each of the base stations receives information of the packet number of the packet to be transmitted next and information identifying which base station will transmit the next packet. Thus, the base station that transmitted a previously-transmitted packet is not necessarily the same base station that will

transmit a next-transmitted packet. And claim 38 recites that the base station selected to transmit the next-transmitted packet identifies this particular packet based on the received information identifying the packet number to be next transmitted.

Modifying Mohebbi's system based on the above-mentioned teachings of Nakajima, in the manner proposed in the Examiner's Answer (see Examiner's Answer, paragraph bridging pages 5 and 6), would result in a system in which each of a plurality of base stations receives, from a mobile station, an ACK or NACK signal and an identification of a particular base station selected to send a next-transmitted packet. If the received signal is an ACK signal, then the selected base station would transmit a packet that it associates with the ACK signal. Specifically, the selected base station would associate a packet in a sequence that is next after the last packet this particular base station transmitted to the mobile station, which last packet is not necessarily the same packet the mobile station last received from one of the base stations. Similarly, if the selected base station receives a NACK signal, this base station associates the NACK signal with the last packet this particular base station transmitted to the mobile station, which is not necessarily the last packet transmitted to the mobile station by any one of the base stations. The following example explains these two situations in greater detail.

Suppose multiple base stations each receive the same ten packets of a sequence (numbered packet 1 through packet 10) to be transmitted to a mobile station. Further suppose that base station 1 communicates packet 1 and, due to poor communication between base station 1 and the mobile station, mobile station 2 is selected to communicate packets 2-5 to the mobile station and base station 1 does not receive an acknowledgment for packet 1. Supposing that the mobile station selects base station 1 to send a next packet because communication between base

station 1 and the mobile station improves after the mobile station correctly receives packets 2-5, then base station 1 would receive an ACK signal and information identifying it as the base station to transmit a next packet. However, due to the previous poor communication between base station 1 and the mobile station, base station 1 has no way of knowing that base station 2 successfully transmitted packets 2-5 to the mobile station or that the mobile station sent an ACK signal for the correct reception of packet 1; thus, base station 1 incorrectly recognizes the ACK signal, which the mobile station sends for the correct reception of packet 5, as an indication that the mobile station correctly received packet 1 from base station 1 and selects packet 2 as the next packet to be transmitted to the mobile station. As a result, base station 1 will transmit packet 2 to the mobile station in a next transmission. And depending upon the number of base stations and the extent to which each of them loses communication with the mobile station, the mobile station could continue to receive packets that it previously received correctly and not receive all ten packets of the sequence for an extended period of time. Similarly, had base station 1 received a NACK signal that the mobile station communicated after incorrectly receiving packet 5, then base station 1 would recognize this received NACK signal as an indication that the mobile station did not receive packet 1 and would then retransmit packet 1 to the mobile station.

The Appellants' claimed subject matter provides an advantage of overcoming the above-described problems of retransmitting a correctly received packet and delaying the successful communication of a packet sequence. Specifically, the Appellants' claimed communication terminal (e.g., mobile station) transmits information indicating the next packet in a sequence that has not yet been received correctly. Thus, regardless of which of a plurality of base stations transmitted one or more previous packets to the communication terminal, the base station

selected by the communication terminal to transmit a next packet will know exactly which packet the communication terminal has not yet received correctly and is expecting in a next transmission.

In summary, Nakajima's disclosed ACK signal only provides an indication to a base station that a packet following its last-transmitted packet, within a sequence, is to be transmitted next and Nakajima's disclosed NACK signal only provides an indication that the packet last transmitted by the base station is to be transmitted next. Neither of Nakajima's ACK and NACK signals inherently identifies a packet number, as proposed in the Examiner's Answer, for the reasons discussed above. More specifically, if Nakajima's ACK and NACK signals inherently indicated a packet number, then the modified system proposed in the Examiner's Answer and discussed above would not suffer from the above-described problem of retransmitting a packet that has already been received correctly.

Moreover, as discussed above and acknowledged in the Examiner's Answer, Nakajima discloses, in Fig. 1, a single base station 101 that communicates with a single mobile station 102. When communicating a sequence of packets to mobile station 102, base station 101 transmits a single packet from the sequence and waits for an acknowledgment or negative acknowledgment signal before retransmitting this packet or transmitting the next packet in the sequence. The previous packet is retransmitted if a NACK signal is received and the next packet in the sequence is transmitted if an ACK signal is received. Because only one base station 101 transmits packets to the one mobile station 102 and only one packet is transmitted until an ACK signal or a NACK signal is received in response, the communication of a packet number from mobile station 102 to base station 101, as proposed in the Examiner's Answer, would be superfluous. A received ACK

signal always means transmit the next packet in the sequence, and a received NACK signal always means transmit the last-transmitted packet. No other packet in the sequence can be transmitted in a next transmission except the last-transmitted packet or the next packet in the sequence, and Nakajima discloses two separate signals for indicating which of the two packets should be the next-transmitted packet. Thus, any other information identifying the packet must necessarily be superfluous for identifying the next-transmitted packet, whether such information is characterized as express, implied, or inherent information. Appellants submit that the proposal in the Examiner's Answer that Nakajima inherently discloses communicating superfluous information is unreasonable, in light of the acknowledgement within the Examiner's Answer that Nakajima does not expressly or impliedly disclose communicating such superfluous information.

Furthermore, to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference. See MPEP § 2112(IV). Because communicating information indicating the packet number of a next packet to be transmitted would be superfluous in Nakajima's system, since only two different packets may be next transmitted and each is identified by a different signal that the Examiner's Answer acknowledges is communicated to the transmitting base station, it necessarily follows *per force* that such superfluous information is not necessarily present in Nakajima's disclosure. Moreover, when relying upon a theory of inherency, the examiner must provide a basis in fact and cogent technical reasoning to reasonably support a determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art. See MPEP § 2112(IV) and *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). The Examiner's Answer and Final Rejection each fails to provide a basis in fact or cogent technical reasoning to reasonably

support a determination that Nakajima's base station can identify a particular packet number from a received ACK/NACK signal and select the packet identified by this packet number for transmission in a next transmission unit, as recited in claim 38.

More specifically, the Examiner's Answer and Final Rejection fail to provide a finding of fact to support an inference that Nakajima's base station can determine a particular packet's packet number from a received ACK or NACK signal. Instead, the Examiner's Answer provides a finding of fact that Nakajima discloses adding a sequence number (e.g., packet number) to a data packet and this packet is transmitted from a base station to a mobile station (see Examiner's Answer page 8, lines 1-3 of quoted material in last paragraph). An ability to add a packet number to a data packet in no way implies an ability to identify a particular packet number from a received ACK or NACK signal. And if no particular packet number can be identified, then a packet identified by the packet number cannot be identified for transmission to the mobile station. Thus, the Examiner's Answer provides no findings of fact to support an inference that Nakajima discloses the claimed subject matter of determining a transmission packet based on received packet number information and transmitting this packet in a next transmission unit.

In subsection E, the Examiner's Answer states that Appellants' argue that Nakajima discloses one-to-one communication between a single base station and a single mobile station, whereas Appellants' claimed invention recites communication between one communication terminal and multiple base stations (see Examiner's Answer subsection E, lines 1-5). To counter this, the Examiner's Answer proposes that: (1) Nakajima's disclosure is cited to supplement the teachings of Mohebbi (see subsection E line 6); (2) Nakajima inherently discloses transmitting packet number information from a mobile station to a base station (see subsections A-D); and

(3) modifying Mohebbi's system in light of Nakajima's teachings would result in a system in which such packet number information is transmitted by a mobile station to each of a plurality of base stations (see page 13, lines 2-7).

The predicate condition cited for the Examiner's Answer assertion -- that modifying Mohebbi's system in light of Nakajima's teachings would result in a system in which packet number information is transmitted by a mobile station to each of a plurality of base stations -- is that Nakajima inherently discloses transmitting packet number information from a mobile station to a base station. Because the predicate condition is unfounded, for the reasons discussed above, so too is the conclusion drawn therefrom.

Mohebbi is not cited in the Examiner's Answer for supplementing the teachings of Nakajima with respect to the above-mentioned subject matter distinguishing claim 38 from Nakajima.

Accordingly, the Appellants submit that the teachings of Mohebbi and Nakajima, even if combined as proposed by the Examiner, would still lack the above-noted features of claim 38, and thus, these references, considered individually or in combination, do not render obvious the subject matter defined by claim 38. More specifically, the applied references fail to disclose the claimed subject matter of: (1) a communication terminal that communicates, to a plurality of base stations, packet number information indicating the packet number of a packet that is requested to be transmitted in a next transmission unit and (2) a base station that determines a packet to transmit in a next transmission unit based on the received packet number information. Independent claim 46 similarly recites this subject matter distinguishing apparatus claim 30 from the applied references, but with respect to a method. Independent claim 43 recites feature (2),

and independent claim 44 recites feature (1); the applied references disclose neither feature (1) nor feature (2). Therefore, reversal of the rejections applied to claims 38, 43, 44, and 46 is deemed to be warranted.

Dependent claims 39-42, 45, and 47-50 incorporate the above-mentioned subject matter distinguishing their respective base claims from Mohebbi and Nakajima. Therefore, reversal of the rejections applied to claims 39, 42-44, 45, and 50 is considered to be warranted. Parkvall is not cited in the Final Rejection for supplementing the teachings of Mohebbi and Nakajima with respect to the above-mentioned subject matter distinguishing the base claims from Mohebbi and Nakajima. Therefore, reversal of the rejections applied to claims 40, 41, 48, and 49 is considered to be similarly warranted.

III. Conclusion

In view of the law and facts stated herein, it is respectfully submitted that all pending claims define patentable subject matter. Therefore, reversal of all outstanding grounds of the rejections is respectfully solicited.

Respectfully submitted,

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